

IN THE CLAIMS

Cancel claims 8, 22, 23, 31, 33, 34, 35, and amend claims 1, 4-7, 9-12, 17, 18, 21, 28, 30, 32, 36, 37, 39. A copy of the amended claims with markings to show changes made is provided herein as appendix A.

CLEAN COPY OF CLAIMS AFTER AMENDMENT

1. (amended once) A method of establishing a communication link between a communication device and a smart card adapted to communicate using a valid smart card communication protocol, wherein the valid smart card communication protocol is one of a plurality of smart card communication protocols, the method comprising the steps of:
- transmitting a plurality of initiation messages, wherein each of the plurality of initiation messages corresponds to each of the plurality of smart card communication protocols;
- receiving an acknowledgment message in accordance with the valid smart card communication protocol from the smart card; and
- establishing the communication link using the valid smart card communication protocol.

2. A method in accordance with claim 1 wherein the step of transmitting comprises the step of transmitting the plurality of initiation messages through a single communication channel.
3. A method in accordance with claim 2 wherein the step of receiving comprises the step of receiving the acknowledgment message through the single communication channel.

4. (amended once) A method in accordance with claim 1 wherein the step of
2 transmitting comprises the steps of:

transmitting a first initiation message in accordance with a first smart card
4 communication protocol;

monitoring, for a first predetermined time, a communication channel for a
6 first acknowledgment message in accordance with the first smart card
communication protocol;

8 transmitting a second initiation message in accordance with a second smart
card communication protocol;

10 monitoring, for a second predetermined time, the communication channel for
a second acknowledgment message in accordance with the second
12 smart card communication protocol; and

repeating the steps of transmitting the first initiation message, monitoring
14 the communication channel for the first acknowledgment message,
transmitting the second initiation message and monitoring the
16 communication channel for the second acknowledgment message
until the acknowledgment message in accordance with the valid smart
18 card communication protocol is received.

5. (amended once) A method in accordance with claim 1 wherein the step of
2 establishing the communication link comprises the steps of:

establishing a first communication link between a master module and the
4 smart card using the valid smart card communication protocol; and

6 establishing a second data communication link between the master module
and a central computer system.

6. (amended once) A method in accordance with claim 5 wherein the step of
2 establishing the communication link between the master module and the smart card

comprises the steps of:

- 4 configuring transceiver hardware in accordance with the valid smart card
communication protocol to acquire an incoming signal in accordance
6 with the valid smart card communication protocol; and
demodulating the incoming signal in accordance with the valid smart card
8 communication protocol.

7. (amended once) A method of establishing a communication link between a
2 central computer system and a smart card, the communication link using a valid
smart card communication protocol of a plurality of smart card communication
4 protocols, the method comprising the steps of:

- polling a communication channel using the plurality of smart card
6 communication protocols, comprising the steps of;
receiving a poll message from the central computer system, the poll
8 message identifying the plurality of smart card communication
protocols;
10 instructing a digital signal processor to generate an initiation message
in accordance with a smart card communication protocol of the
12 plurality of smart card communication protocols;
configuring transceiver hardware in accordance with the smart card
14 communication protocol;
transmitting the initiation message through the communication
16 channel;
waiting a predetermined wait period associated with the smart card
18 communication protocol unless a valid acknowledgment
message is received; and
20 repeating, for another smart card communication protocol of the
plurality of smart card communication protocols, the steps of

22 instructing, configuring the transceiver hardware, transmitting
 the initiation message, and waiting;
24 identifying the valid smart card communication protocol when the valid
 acknowledgment message is received through the communication
26 channel; and
 establishing the communication link between the smart card and the central
28 computer system through the communication channel using the valid
 smart card communication protocol.

8. (cancelled)

8 (amended once) A method in accordance with claim 7 further comprising the
2 steps of:

 shifting an incoming radio frequency signal to a desired frequency bandwidth
4 to produce a shifted signal;
 converting the shifted signal to a digital signal; and
6 demodulating the digital signal in accordance with the smart card
 communication protocol.

9 (amended once) A method in accordance with claim 8 wherein the step of
2 shifting the incoming radio frequency signal comprises the step of shifting the
 incoming radio frequency signal to a baseband frequency bandwidth.

10 (amended once) A method in accordance with claim 9 wherein the step of
2 shifting the incoming radio frequency signal comprises the step of shifting the
 incoming radio frequency to a subcarrier frequency bandwidth.

~~11~~ 12. (amended once) A method of establishing a communication link between a
2 communication device and a smart card adapted to communicate using a valid
smart card communication protocol, wherein the valid smart card communication
4 protocol is one of a plurality of smart card communication protocols, the method
comprising the steps of:

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6 sequentially transmitting a plurality of initiation messages, wherein each of
the plurality of initiation messages corresponds to each of the plurality
8 of smart card communication protocols;
monitoring a communication channel for an acknowledgment message
10 corresponding to one of the plurality of smart card communication
protocols until an acknowledgment message in accordance with the
12 valid smart card communication protocol is received; and
establishing the communication link using the valid smart card
14 communication protocol.

~~12~~ 13. A smart card communication device for establishing a communication link
2 between a smart card and a computer, the smart card communication device
comprising:

4 a transceiver having a variable structure responsive to a control signal;
a digital signal processor coupled to the transceiver;
6 a controller coupled to the digital signal processor and the transceiver, the
controller adapted to generate the control signal based on a plurality
8 of smart card communication protocols.

~~13~~ 14. A smart card communication device in accordance with claim ~~13~~ ¹² wherein the
2 controller is further adapted to instruct the digital signal processor to demodulate an
incoming signal received by the transceiver in accordance with the plurality of smart
4 card communication protocols.

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15. A smart card communication device in accordance with claim 13 wherein the
2 transceiver comprises:

a radio frequency transmitter adapted to generate an electromagnetic field;

4 and

a radio frequency receiver adapted to detect variations in the
6 electromagnetic field.

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16. A smart card communication device in accordance with claim 15 wherein the
2 radio frequency receiver comprises:

a first configuration based on the control signal and adapted to shift a data
4 signal modulated onto an incoming radio frequency signal to a first
desired frequency bandwidth; and

6 a second configuration based on the control signal and adapted to shift the
data signal to a second desired frequency bandwidth.

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17. (amended once) A smart card communication device in accordance with claim
2 16 wherein the digital signal processor comprises:

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a first demodulator adapted to demodulate the data signal in accordance
4 with a first smart card communication protocol of the plurality of smart
card communication protocols;

6 a second demodulator adapted to demodulate the data signal in accordance
with a second smart card communication protocol of the plurality of
8 smart card communication protocols.

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18. (amended once) A smart card communication device in accordance with claim
2 17 wherein:

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the first desired frequency bandwidth is a baseband frequency bandwidth;

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and

the second desired frequency bandwidth is a subcarrier frequency
bandwidth.

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19. A smart card communication device in accordance with claim 13, wherein the
controller is further adapted to receive a plurality of commands from a master
module instructing the controller to poll for one or more smart cards, wherein each
smart card corresponds to one of the plurality of smart card communication
protocols.

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20. A smart card communication device for communicating with a smart card using
a valid smart card communication protocol of a plurality of smart card
communication protocols, the device comprising:

a digital signal processor adapted to generate a plurality of initiation
messages wherein each of the initiation messages is in accordance
with each of the plurality of smart card communication protocols; and
a transceiver coupled to the digital signal processor and adapted to transmit
the plurality of initiation messages in accordance with a modulation
type corresponding to an initiation message of the plurality of initiation
messages corresponding to a first smart card communication protocol
of the plurality of smart card communication protocols.

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21. (amended once) A digital signal processor comprising:

a first demodulator adapted to demodulate a first incoming data signal in
accordance with a first smart card communication protocol, wherein
the first demodulator is a split phase demodulator adapted to
demodulate the first incoming data signal modulated using amplitude
shift keying modulation for contactless smart cards;

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- 8 a second demodulator adapted to demodulate a second incoming data
10 signal in accordance with a second smart card communication
12 protocol, wherein the second demodulator is a Costas loop
demodulator adapted to demodulate the second incoming data signal
modulated using amplitude shift keying modulation for contactless
smart cards; and
14 a third demodulator adapted to demodulate a third incoming data signal in
accordance with a third smart card communication protocol.

22. (cancelled)

23. (cancelled)

24. A radio frequency circuit adapted for establishing a communication link with a
2 smart card using any one of a plurality of smart card communication protocols, the
radio frequency circuit comprising:
4 a first configuration based on a control signal and adapted to acquire a data
signal modulated onto an incoming radio frequency signal in
6 accordance with a first smart card communication protocol of the
plurality of smart card communication protocols; and
8 a second configuration based on the control signal and adapted to acquire
a data signal modulated on to the incoming radio frequency signal in
10 accordance with a second smart card communication protocol of the
plurality of smart card communication protocols.

25. A radio frequency circuit in accordance with claim 24, wherein the first
2 configuration comprises a mixer adapted to shift the data signal to a baseband
frequency band.

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28. A radio frequency circuit in accordance with claim ~~25~~, wherein the second configuration comprises a filter coupled to an output of the mixer, the filter having a frequency response minimizing signals outside a subcarrier bandwidth.

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27. A radio frequency circuit in accordance with claim ~~26~~, further comprising:
a analog to digital converter; and
a switch adapted to couple the output of the mixer to the analog to digital converter in a first mode and adapted to couple an output of the filter to the analog to digital converter in a second mode.

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28. (amended once) A radio frequency circuit adapted for use in a smart card communication device, the radio frequency circuit comprising:
a first mixer adapted to shift an incoming radio frequency signal to a baseband frequency to produce a baseband signal;
a second mixer shifting the baseband signal to a subcarrier frequency; and
a switch having a first input port coupled to the first mixer, a second input port coupled to an output of the second mixer, and an output port, the switch adapted to couple the first input port to the output port in a first mode and the second input port to the output port in a second mode.

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29. A radio frequency circuit in accordance with claim ~~28~~ further comprising an analog to digital converter coupled to the output port of the switch.

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30. (amended once) A radio frequency circuit in accordance with claim ~~29~~ wherein the switch is adapted to receive a control signal for indicating one of the first mode and the second mode, the first mode corresponding to at least a first smart card communication modulation scheme and the second mode corresponding to at least

a second smart card communication scheme.

31. (cancelled)

32. (amended once) A method of communicating with a non-contact smart card comprising the steps of:

establishing a radio frequency communication channel between a smart card communication device and the non-contact smart card, comprising the steps of;

demodulating an incoming radio frequency signal transmitted from the non-contact smart card to produce an incoming bit data stream;

modulating an outgoing bit data stream transmitted from the remotely located master module to produce an outgoing radio frequency signal;

arranging the incoming bit data stream into a plurality of incoming data packets; and

appending a header to at least one packet of the plurality of incoming data packets, the header including information indicating a security device type;

establishing a data channel between the smart card communication device and a remotely located master module; and

establishing a secure communication channel between the remotely located master module and the non-contact smart card using a security device within the remotely located master module, comprising the steps of:

removing the header from the at least one packet to produce incoming data at the remotely located master module; and

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routing the incoming data to the security device based on the information included in the header, wherein the security device is one of a plurality of security devices within the master module.

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33. (cancelled)

34. (cancelled)

35. (cancelled)

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36. (amended once) A method of remotely re-programing a smart card communication device comprising the steps of:

transmitting new code through a data channel from a central computer system through a master module coupled to a network; storing the new code in a memory device; and loading the new code from the memory device to a processor.

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37. (amended once) A method in accordance with claim 36, wherein the new code facilitates a demodulation of a signal transmitted in accordance with a smart card communication protocol.

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31. A method in accordance with claim 36, wherein the memory device is an electrically erasable programable read only memory device.

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32. (amended once) A method in accordance with claim 36, wherein the memory device is a ferro-electric random access memory device.

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